ABSTRACT

New tolane and bis-tolane compounds:

$$\begin{array}{c} Z_1 \\ X_1 \\ X_2 \end{array} \qquad \begin{array}{c} Y_1 \\ Y_2 \end{array}$$

(Structure IV)

$$R_{m} - \underbrace{ \begin{pmatrix} A_{1} & Z_{1} & Y_{1} \\ & Z_{2} & T_{1} - \begin{pmatrix} & & & \\ & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & \\ & & & & \\ & & & \\ & & & & \\ & & \\ & & & \\ & & & \\ & & \\ & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & &$$

(Structure V)

in which X is F (fluoro), CN (cyano), OCF₃ (trifluoromethoxy), or NCS (isothiocyanate) at least one of the pairs Y_1 and Y_2 , Z_1 and Z_2 , and Z_1 and Z_2 are fluoro groups.

 T_1 for the tolanes is a triple bond. For the bis-tolanes T_1 and T_2 are either both triple bonds or one of the two groups is a double bond.

 R_n or R_m may be an alkyl group, an alkenyl group, an alkoxy group, or an alkenoxy group. For the tolane compounds, R_n may be a:

A

dioxane substituent:

$$R_{\bar{X}} - \left\langle \begin{array}{c} O \\ O \\ \end{array} \right\rangle$$

(Structure VII)

A1 Cont

in which R_x may be as R_n or R_m above.

These compounds exhibit useful nematic ranges and melting points. Also disclosed are eutectic mixtures including these compounds.